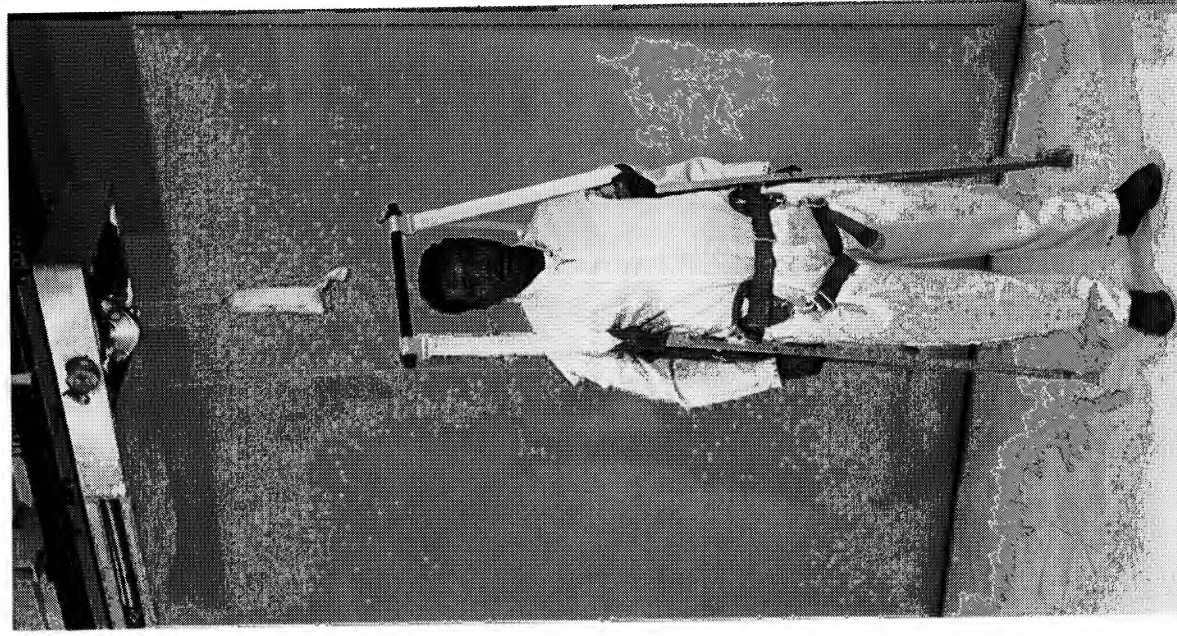


*Unskilled technician tests patient's eyes in seconds using automatic instrument spun off from NASA research. Device prints prescription for glasses, also checks for cataracts and glaucoma.*

*Lunar gravity simulator for training astronauts has been adapted to rehabilitation efforts. Man uses the weight-alleviation device to re-learn muscular coordination following a stroke.*



## Vision test in seconds

You can have your eyes tested in seconds, and by a relatively unskilled operator, with an electro-optical instrument transferred from NASA-Ames research. The device automatically measures the refractive error of the eye and prints out the proper prescription for glasses. The unit also detects cataracts.

Stanford Research Institute developed the original instrument under grant from NASA to measure the visual performance of pilots. It was a servo-controlled infrared optometer—or instrument that measures the eye's focus. In a classic case of "people transfer," Acuity Systems Inc., Reston, Va., employed Dr. Tom N. Cornsweet who had worked at SRI on the optometer. Cornsweet developed the Acuity instrument, called "auto-refractor."

The device contains three subsystems. One presents the visual target to the patient. A second performs automatic alignment. The third measures the refractive error, or defect in the eye that prevents exact focusing. The instrument deflects infrared light rays entering the eye until they meet at the retina. Then it measures the amount of deflection necessary.

A special-purpose computer provides a readout, or prescription, in three values: sphere error that measures farsightedness and nearsightedness, cylindrical error, and cylindrical axis. The last two measure the degree of astigmatism. All this takes 4 seconds.

Among the advantages of the machine, large numbers of people—such as in schools and factories—can be tested quickly without a physician's attention.

Some 400 instruments have been sold throughout the world. Last year, the company expanded by introducing an automatic lens meter to measure the strength of corrective lenses.

## Offsetting gravity

The only condition of space that cannot be simulated on earth is weightlessness. Attempts to approximate it have led astronauts underwater and into harnesses that suspend all or a portion of their weight.

One such suspension device built at Langley Research Center to approximate the one-sixth gravity of the moon now is being transferred to rehabilitation work. Such a weight-alleviation device could enable a person to walk and re-learn muscular coordination following a stroke. Hospitals could use it to lift handicapped patients.

The NASA Biomedical Application Team at the Research Triangle Institute in North Carolina is working with the Coastal Center, Ladson, S.C., to adapt the device for physically and mentally incapacitated children.